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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,697	11/18/2003	Wayne J. Hamilton	02-1166	5390
74576	7590	12/18/2009	EXAMINER	
HUGH P. GORTLER			BOES, TERENCE	
23 Arivo Drive			ART UNIT	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/715,697

**Applicant(s)**

HAMILTON, WAYNE J.

**Examiner**

TERENCE BOES

**Art Unit**

3656

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-10 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-10 and 14-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Reopening Prosecution***

1. In view of the Appeal Brief filed on 10/01/2009, PROSECUTION IS HEREBY REOPENED. An action on the merits is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Richard WL Ridley/

Supervisory Patent Examiner, Art Unit 3656.

***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the engine must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 7, 9, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ovshinsky US 2,967,980.

Ovshinsky discloses:

- a first shaft (304); a spur gear (314) mounted to the first shaft;
- a second system including: a second shaft (302, 300),
- the first and second shafts having an angular variance greater than zero degrees (this can clearly be seen in figure 10);
- a face gear (306, 310, 312) including a hub (306) mounted to the second shaft (300, 302)
- an angled gear flange (310) surrounding the hub (306), and a plurality of gear teeth (see 312 in figures 10 and 11) on the gear flange,
- the face gear in mesh with the spur gear (312 is shown meshing with 314 in figure 10)
- wherein a first vector normal to an outside surface of the angular flange (see line which is normal to dash-dot line through gear teeth 312) and a second vector normal to the second shaft (axis of 300, 302) form an angle

that is equal to the angular variance of the first and second shafts (this can be deduced upon viewing figure 10)

- wherein the teeth of the face gear are formed by a precision grinding method (product by process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. See MPEP 2113).

Regarding claim 15,

- first and second shafts that are non-parallel (304, 300, 302);
- a spur gear on the first shaft (314);
- a face gear (306, 310, 312) on the second shaft,
- the face and spur gears in constant mesh (this can be seen in figure 4),
- the face gear including a hub (306) on the second shaft,
- an angled flange (310) around the hub,
- gear teeth (312) on the angled flange,
- the flange angled so the face gear achieves line contact with the spur gear when the gears are in mesh (this can be seen in figure 10).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 7-9, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokel USP 3,803,934 in view of Ovshinsky US 2,967,980 (as discussed above).

Yokel discloses:

- a first shaft (10); a gear (18) mounted to the first shaft;
- a second system including: a second shaft (40),
- the first and second shafts having an angular variance greater than zero degrees (C3/L15-20);
- a face gear (44) including a hub mounted to the second shaft (40)
- an angled gear flange (see @ 44 in figure 1) surrounding the hub, and a plurality of gear teeth (these can clearly be seen in figure 1) on the gear flange,
- the face gear in mesh with the gear (44 is shown meshing with 18 in figure 1)
- wherein the second system includes an engine (C2/L14-15) for driving the first shaft and a transmission (see transmission in abstract) driven by the second shaft

- wherein the teeth of the face gear are formed by a precision grinding method (product by process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. See MPEP 2113).
- wherein the first and second shafts have an angular variance of no more than 30 degrees (C3/L15-20).

Regarding claim 15,

- first and second shafts that are non-parallel (10 and 40);
- a first gear on the first shaft (18);
- a face gear (44) on the second shaft,
- the face and first gears in constant mesh (this can be seen in figure 4),
- the face gear including a hub (see inside portion of gear 44) on the second shaft,
- an angled flange (see angle of flange of gear 44) around the hub,
- gear teeth (see gear teeth of gear 44) on the angled flange,

Yokel discloses meshing gears on angled shafts for transmitting motion. Yokel does not disclose a spur gear meshed with a low angle face gear. Ovshinsky teaches a spur gear (314) meshed with a face gear (312) to transmit motion to an angled shaft. Because both Yokel and Ovshinsky teach meshing gears to transmit motion on angled shafts, it would have been obvious to one having ordinary skill in the art at the time of the invention to substitute gear pairs to achieve the predictable result of transmitting motion on angled shafts.



4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stone et al. US 3,942,387 in view of Ovshinsky US 2,967,980.

Stone et al. discloses:

- a first shaft (12);
- a gear (18) mounted to the first shaft;
- a second shaft (32), the first and second shafts having an angular variance greater than zero degrees (C2/L32);
- a face gear (30) including a hub (see portion of 30 shown radially inside of reference character 30 in figure 1) mounted to the second shaft (32),
- an angled gear flange (see solid portion of 30 immediately adjacent gear teeth shown at 30) surrounding the hub, and a plurality of gear teeth on the gear flange (shown at 30 in figure 1), the face gear in mesh with the spur gear (30 is shown meshing with 18),
- an engine (C2/L14) for driving the first shaft and a transmission (28) driven by the second shaft.

Stone et al. discloses meshing gears on angled shafts for transmitting motion. Stone et al. does not disclose a spur gear meshed with a face gear. Ovshinsky teaches a spur gear (314) meshed with a face gear (312) to transmit motion to an angled shaft. Because both Stone et al. and Ovshinsky teach meshing gears to transmit motion on angled shafts, that is to say they both disclose solving the problem of transmitting motion between angled shafts with angled gears, it would have been obvious to one having ordinary skill in the art at the time of the invention to substitute the gear pair taught by Ovshinsky to achieve the predictable result of transmitting motion from a shaft to another angled shaft.

In addition the gear pair taught by Ovshinsky further comprises:

- wherein a first vector normal to an outside surface of the angular flange (see line which is normal to dash-dot line through gear teeth 312) and a second vector normal to the second shaft (axis of 300, 302) form an angle that is equal to the angular variance of the first and second shafts (this can be deduced upon viewing figure 10)

#### ***Response to Arguments***

5. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **TERENCE BOES** whose telephone number is (571)272-4898. The examiner can normally be reached on **Monday - Friday 9:00 AM - 4:00 PM**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Terence Boes/  
Examiner, Art Unit 3656

/Richard WL Ridley/  
Supervisory Patent Examiner, Art Unit 3656